



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,373	01/30/2006	Shugo Nishi	284523US0PCT	2096
22850	7590	09/21/2009	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			ZIMMER, ANTHONY J	
			ART UNIT	PAPER NUMBER
			1793	
			NOTIFICATION DATE	DELIVERY MODE
			09/21/2009	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com  
oblonpat@oblon.com  
jgardner@oblon.com

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/566,373	NISHI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	ANTHONY J. ZIMMER	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 13 July 2009.

2a) This action is **FINAL**.                            2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1,2 and 6-11 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-2 and 6-11 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.

5) Notice of Informal Patent Application

6) Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/19/2009 has been entered.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claims 1-2 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyer '298.***

In regard to claims 1-2 and 7-8, Boyer '298 teaches a precipitated (amorphous) silica with a pore peak diameter at the maximum of the volume pore size distribution curve in the range of 30-200 nm (a radius of 15-100 nm) preferably 45-130 nm (radius of 22.5-65 nm) and an oil adsorption value of 180-300 cm<sup>3</sup>/100g. See claim 1. Overlapping ranges and ranges that do not overlap but are close enough that one skilled in the art would expect them to have the same properties are *prima facie* obviousness. See MPEP 2144.05.

Boyer '298 is silent as to the maximum value of  $\Delta V_p / \Delta R_p$  and the values of OI1 and OI2. However, the process of preparing the silica of Boyer '298 is substantially identical to that of Example 2 of the instant application and thus produces a substantially identical product. In particular, both processes react sodium silicate with acid under shearing forces at similar temperatures (95°C in instant Example 2 and 91-100°C in Boyer '298), aging (holding the temperature for a time), adjusting the pH (to similar levels), filtering, washing, drying (spray drying), and pulverization. See column 6, line 59 - column 8, line 2. Further, the process as generally described in Boyer '298 is substantially identical to that generally described in the instant application. Compare col. 6, line 59 – col. 8, line 2 and the Examples of Boyer '298 with instant [0020]–[0028].

In regard to claims 9 and 11, Boyer '298 teaches using the amorphous silica as a matting agent in a battery separator, i.e. blending the silica with a resin. See column 1, lines 5-16. Furthermore, amorphous silica is routinely used in the art as a matting agent. (See, for instance, US5637636, column 2, lines 35-56.)

In regard to claim 10, the claim only requires the silica as addressed above. Thus, the claim limitations are considered to be met.

**Claims 1-2 and 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyer '298, as applied to claims 1-4 above, further in view of Kuhlmann '198.**

In regard to claims 1-2 and 7-8, Boyer '298 teaches a precipitated (amorphous) silica with a pore peak diameter at the maximum of the volume pore size distribution curve in the range of 30-200 nm (a radius of 15-100 nm) preferably 45-130 nm (radius

of 22.5-65 nm) and an oil adsorption value of 180-300 cm<sup>3</sup>/100g. See claim 1. Overlapping ranges and ranges that do not overlap but are close enough that one skilled in the art would expect them to have the same properties are *prima facie* obviousness. See MPEP 2144.05. Further it is known in the art from Kuhlmann that the oil absorption property of amorphous silica is affected by the pH of the silica and that pH can be adjusted by utilizing ammonia gas during a drying process or a separate ammonia treatment process. See [0023]-[0024]. Thus, the oil absorption capacity is a matter of design choice and routine optimization that fails to produce an unexpected result. See MPEP 2144.05.

Boyer '298 is silent to the maximum value of  $\Delta V_p / \Delta R_p$  and the values of OI1 and O12. However, the process of preparing the silica of Boyer '298 is substantially identical to that of Example 2 of the instant application and thus produces a substantially identical product. In particular, both processes react sodium silicate with acid under shearing forces at similar temperatures (95°C in instant Example 2 and 91-100°C in Boyer '298), aging (holding the temperature for a time), adjusting the pH (to similar levels), filtering, washing, drying (spray drying), and pulverization. See column 6, line 59 - column 8, line 2. Further, the process as generally described in Boyer'298 is substantially identical to that generally described in the instant application. Compare col. 6, line 59 – col. 8, line 2 and the Examples of Boyer'298 with instant [0020]-[0028].

In regard to claims 5-6, Boyer '298 fails to teach a silica with an oil adsorption in the range of the claims. However, it would have been obvious to one of ordinary skill in the art to modify Boyer '298 in view of Kuhlmann because Kuhlmann teaches that the oil

absorption property of amorphous silica is affected by the pH of the silica and that pH can be adjusted by utilizing ammonia gas during a drying process or a separate ammonia treatment process. See [0023]-[0024]. Thus, the oil absorption capacity is a matter of design choice and routine optimization that fails to produce an unexpected result. See MPEP 2144.05.

In regard to claims 9-10, Boyer '298 is silent in regard to using amorphous silica as an adsorbent for pharmaceuticals or agrochemicals; however, Kuhlmann teaches using amorphous silica as an adsorbent (carrier) for pharmaceuticals and agrochemicals. See [0026]. Thus, employing the amorphous silica of Boyer'298 in a known use for amorphous silica in the art would have been obvious to one of ordinary skill.

In regard to claim 11, Boyer '298 teaches using the amorphous silica as a matting agent in a battery separator (i.e. blending the silica with a resin). See column 1, lines 5-16. Furthermore, amorphous silica is routinely used in the art as a matting agent. See US5637636, column 2, lines 35-56.

**Claims 1-2 and 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boyer '569.**

In regard to claims 1-2 and 7-8, Boyer '569 teaches a amorphous precipitated silica with an oil absorption of 180-320 cm<sup>3</sup>/g, a surface area of 100-300 m<sup>2</sup>/g (compare to instant [0039]). See claim 1. Boyer '569 is silent in regard to the other properties required by the claims (i.e. the maximum value of ΔVp/ΔRp and the values of OI1 and

O12). However, the process of producing the silica in Boyer '569 is substantially identical to that instantly disclosed (compare instant [0021]-[0028] to Examples 1 and 2 of Boyer '569) and thus must produce substantially identical products. Further, the product of Boyer '569 appears to be the same as that instantly disclosed because the known properties are the same. See the previously mentioned properties (oil absorption and surface area). Burden is on applicant to show an unobvious difference. See MPEP 2112.

In regard to claim 6, Boyer '569 teaches an oil absorption of 180-320 cm<sup>3</sup>/g. Overlapping ranges and ranges that do not overlap but are close enough that one skilled in the art would expect them to have the same properties are *prima facie* obviousness. See MPEP 2144.05. In the instant case an oil absorption of 320 cm<sup>3</sup>/g and one very slightly larger would be expected to have substantially identical properties.

In regard to claims 9 and 11, Boyer '569 teaches using the amorphous silica as a matting agent in a battery separator (i.e. blending the silica with a resin). See column 1, lines 5-16. Furthermore, amorphous silica is routinely used in the art as a matting agent. (See, for instance, US5637636, column 2, lines 35-56.)

In regard to claim 10, the claim only requires the silica as addressed above. Thus, the claim limitations are considered to be met.

**Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boyer '569 in view of Kuhlmann '198.**

In regard to claims 6, Boyer '569 does not teach a silica with an oil adsorption in the range of the claim. However, it would have been obvious to one of ordinary skill in the art to modify Boyer '569 in view of Kuhlmann because Kuhlmann teaches that the oil absorption property of amorphous silica is affected by the pH of the silica and that pH can be adjusted by utilizing ammonia gas during a drying process or a separate ammonia treatment process. See [0023]-[0024]. Thus, the oil absorption capacity is a matter of design choice and routine optimization that fails to produce an unexpected result. See MPEP 2144.05.

### ***Response to Arguments***

Applicant's arguments and supporting declaration, in regard to the 102(b)/103(a) rejection over Kuhlmann '198 have been fully considered and are persuasive. This rejection has been withdrawn.

Applicant argues that Boyer '298 does not teach an oil absorption above 300 cm<sup>3</sup>/g. This was found to be unpersuasive for reasons presented in the rejection above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANTHONY J. ZIMMER whose telephone number is (571)270-3591. The examiner can normally be reached on Monday - Friday 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 571-272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ajz

/Steven Bos/

Primary Examiner, Art Unit 1793